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A New Genus of Xystodesmid Millipeds from the Riu Kiu Archipelago with Notes on Related Oriental Genera

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During the course of sorting and identifying specimens of millipeds in the collection of the U. S. National Museum, a single male polydesmoid representing an undescribed genus and species of the family Xystodesmidae was discovered among material from the Riu Kiu Islands. The necessary names are herein proposed and defined, and the occasion is taken for correction of some errors noted in the literature on the order Merocheta.

The new form is named for its collector, Dr. Frank N. Young of the University of Florida, in recognition of his interest in securing diplopod material incidently to the collection of specimens in his special field of study.

Yaetakaria, new genus

A xystodesmid genus characterized as follows: repugnatorial pores lateral, on side of definite swelling; pore formula normal; tergites smooth, well arched; keels of segments 5-19 with caudolateral corners produced caudad; prosternites large, as long as or longer than metasternites; prefemora and sternites not produced or lobed; femora with short acute spines at the ventral end; third tarsal joint longer than first two combined and longer than femur, first tarsal joint much thicker than third; no special pregenital sternal processes; seminal apertures at end of short, oval processes. Male gonopod with the coxal joint proximally produced into a long slender process; femoral portion large, robust, with a large, laminate, terminally bidentate femoral process; tibiotarsus bent cephalad over base, divided into two subequal branches.

Genotype. Yaetakaria youngi, new species.

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The following species is referable to this genus:

Yaetakaria neptuna (Pocock)

Fontaria neptunus Pocock, 1895, Ann. & Mag. Nat. Hist., ser. 6, vol. 15, p. 360, pl. 11, fig. 10 Type locality: Great Loo Choo Island (old name for Okinawa).

Rhysodesmus neptunus ATTEMS, 1938, Das Tierreich, Lief. 69, p. 142, fig. 164.

Pocock's figure of the gonopod of this species appears to be poorly drawn. If accurate, however, the three-pointed end of the telopodite is the most obvious point of difference from the new species here proposed. The somewhat larger size of *neptuna*, 40 x 7.5 mm., may also be a specific difference.

Yaetakaria youngi, new species

Figures 1, 2

Type specimen. Adult male holotype, U.S.N.M. No. 1852, collected at Yaetake, Okinawa Island, Riu Kiu Archipelago, on August 8, 1945, by Dr. Frank N. Young (field no. 141).

Diagnosis. With the characters as given above under genus, further distinguished by the details of the male gonopod as figured.

Description of holotype. Length, 36.5, width, 7.2 mm.; sides of body subparallel, segments 5 through 13 of approximately full width. Tergites very smooth, well arched. Keels wide, somewhat inflated dorsad, repugnatorial pore formula normal, pores lateral in position on sides of pronounced dorsolateral swellings.

Collum large, subtrapezoidal in dorsal aspect, as long as next two segments combined, caudal edge swept forward toward ends, front side convex, lateral extremities directed caudoventrad, rather acute; very pronounced cephalolateral dorsal marginal ridges.

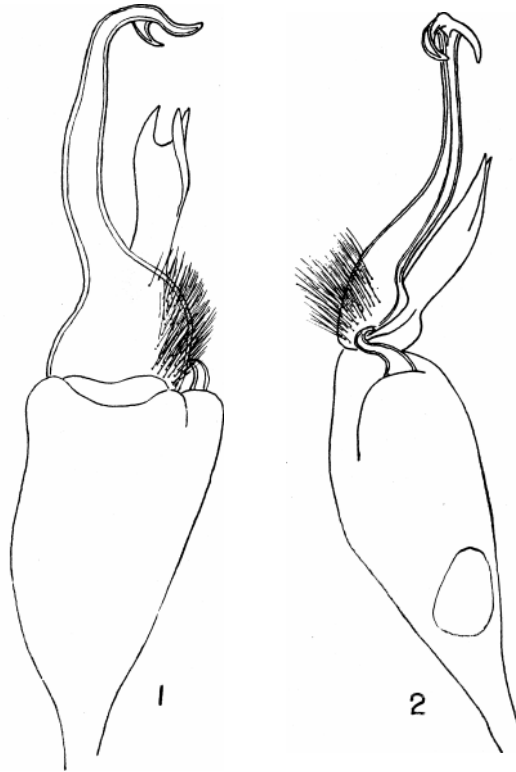
Succeeding three segments similar, their keels thrust cephalad out of line with rest of tergite, marginal swellings well developed.

Tergites of segments 5 through 13 similar, anterior corners rounded, posterior corners produced, becoming increasingly so caudally; tergites smooth, arched, caudal margins straight across entire width of body.

Tergites of segments 14 through 19 becoming narrower, less arched; anterior corners of keels becoming obliterated, the posterior corners more produced. Length of keel of nineteenth segment, measured from caudal margin of tergite, 0.6 mm., width between bases of keels, 2.0 mm.

Anal valves smooth, mesial ridges moderate in size; preanal scale nearly semicircular with small but definite lateral tubercles.

Bases of last pair of legs well separated, interval 1.3 mm. All sternites smooth and wide (greater than length of femora); pro- and metasternites well



Yaetakaria youngi new species

Fig. 1. Mesial view of right gonopod of male holotype. Fig. 2. Cephalic view of same. Some of the basal setae are omitted in both figures to show structure clearly.

separated by a conspicuous suture, prosternite somewhat longer of the two. Legs at midbody 2.2 mm. apart at their bases. Prefemora and sternites not spired, femoral spines small but sharp. Joints of legs noticeably short and somewhat compressed longitudinally except terminal ones. Prefemur and femur subequal in size, tibia slightly longer than femur and with smaller diameter; first tarsal joint robust, trapezoidal, much thicker than terminal two joints; third tarsal joint slender, cylindrical, as long as basal two combined, also longer than femur. Tarsal claw small, slightly curved. Legs sparingly hirsute.

Gonopods protruding from a relatively small aperture. Coxal joint of gonopods produced proximally into a long, slender, internal process, this as long as blade of telopodite. Coxa slender, its cephalomedian side with a small triangular aperture. Femoral portion high and rather flat on the mesial side, its cephalic portion setiferous; a large lateral femoral process, about half the length of main branch of gonopod, laminate and with edges rolled upward, terminating in three acute points. Tibiotarsus of gonopod upright, gently curved laterad, slender, terminally divided into two flattened subequal branches, of which the larger mesial element, bearing a small sharp spur near its base, is modified as a solenomerite. Proportions and shape of gonopods as figured.

Pregenital sternites without special lobes or processes. Prefemora of second pair of legs with small upright seminal lobes, these wider than long.

Head without special features. Clypeal suture rather distinct. Antennae with sixth article longest; second article somewhat bent at base. Organ of Tomosvary a small vertical slit set on a flat nearly circular elevation.

Color in life unknown. Holotype at present completely bleached.

Remarks. Dr. Young was kind enough to supply me with the following field notes which are of interest in that they provide an exact position for the type locality and indicate something of the habitat of the species:

"No. 141, Yaetake, Motobu-Mura, Okinawa Shima. 8 Oct. '45. Collected along trail leading off road along Manna Gawa (a small river) east of Toguchi towards Yaetaki (a mountain, max. el. 1457 meters). Collecting was done above about 400 and 500 meters elevation. Central portion of mountain area on Motobu Peninsula (through which this trail passes) is considerably wilder than elsewhere on island, but still in part cultivated and cut-over. No virgin forest was encountered, and none was visible on any of the surrounding mountains. Collecting in high valleys was very good. Several beetles not found at lower elevations were taken. Collected mostly by beating, turning over rocks and logs, etc."

Dr. Young also supplied the following comment (*in litt.*, Nov. 12, 1948):

"The central part of the range of mountains in which the above collection was made is much more humid than the eastern slope which I visited later, and which proved to be rather dry."

Associated with the specimen of *youngi* was an adult male *Riukiaria pug-ionifera* Verhoeff.

Genus *Riukiaria* Verhoeff

Riukiaria VERHOEFF, 1936, Zool. Anz., vol. 115, p. 298; ATTEMS, 1938, Das Tierreich, Lief. 69, p. 151.

Riukiaria holstii (Pocock)

Fontaria holstii Pocock, 1895, Ann. & Mag. Nat. Hist., ser. 6, vol. 15, p. 360, pl. 11, fig. 9, Great Loo Choo Island (Okinawa).

Riukiaria variata (Pocock)

Fontaria variata **Pocock**, 1895, Ann. & Mag. Nat. Hist., ser. 6, vol. 15, p. 361, pl. 11, fig. 15, Great Loo Choo Island (Okinawa).

Attems' monumental work on the polydesmoids (Das Tierreich, Lief. 69) places both of the above species in *Rhysodesmus*, despite the fact that neither has the telopodite of the male gonopod distally bifid, which is the diagnostic character of that exclusively Middle American genus. Furthermore, Verhoeff properly allocated *holstii* in *Riukiaria* in 1937 (Zool. Anz., vol. 117, p. 318) although this seems to have been overlooked by Attems.

As currently known, *Riukiaria* is now composed of four nominal species. The two not listed above are *R. pugionifera* Verhoeff and *R. falcifera* Verhoeff (Zool. Anz., vol. 115, p. 299-300, 1936). Upon further study one of these may prove to be a synonym of *R. holstii* but the rather small size of *R. variata* would suggest that it is specifically distinct from either of the latter forms.

Genus *Japonaria* Verhoeff*

Fontaria **GRAY** of **ATTEMs**, 1931, Zoologica, vol. 30, Lief 3/4, p. 69 (in part, composite diagnosis).

Japonaria **VERHOEFF**, 1936, Trans. Sapporo Nat. Hist. Soc., vol. 15, p. 155 (as subgenus of *Fontaria*).

Parafontaria **VERHOEFF**, 1936, Zool. Anz., vol. 115, p. 301 (as subgenus of *Fontaria*).

Japonaria **ATTEMs**, 1938, Das Tierreich, Lief. 69, p. 174.

Parafontaria **ATTEMs**, 1938, Das Tierreich, Lief. 69, p. 179 (as subgenus of *Japonaria*).

Grayaria **CHAMBERLIN**, 1943, Bull. Univ. Utah, vol. 34, no. 6, p. 16.

Genotype. *J. falcifera* Verhoeff, by designation of Attems, 1938. Type of *Parafontaria*, *P. armigera* Verhoeff, by monotypy; of *Grayaria*, *G. attemsi* Chamberlin, by original designation and monotypy.

In 1931 Attems gave a diagnosis of *Fontaria* which was based in part on specimens figured but not identified. Reference to earlier (Attems, 1909) and later (Attems, 1938) figures shows that the specimens were the species named *acutidens* by Attems in 1909 (Ark. f. Zool., vol. 5, no. 3, p. 30). In 1943 Chamberlin recognized that the 1931 figures represent a species that is not congeneric with the genotype of *Fontaria* (*virginiensis* Drury) but he failed to recognize that it was the species previously named by Attems. Chamberlin renamed the species represented by the figures (under the impression that Attems has called it *virginiensis*) and placed it in the new genus *Grayaria*.

*I wish to here express my indebtedness to Dr. E. A. Chapin, Curator of Insects, U. S. National Museum, for valuable assistance in preparing the following synonymy of *Japonaria* and advice concerning some of the terms here employed.

It now is obvious that *Grayaria attemsi* Chamberlin is congeneric with *Japonaria falcifera* Verhoeff. *Grayaria* therefore falls as a synonym of *Japonaria*; *G. attemsi* Chamberlin becomes a junior homonym of *J. attemsi* Verhoeff, and also a junior synonym of *J. acutidens* Attems.

Parafontaria (*op. cit.*) and *Cyphonaria* (Trans. Sapporo Nat. Hist. Soc., vol. 14, p. 154) were proposed by Verhoeff in 1936 as subgenera of *Fontaria*. Males of *Cyphonaria* are not known, so that the systematic position of the genus remains attended by doubt and cannot be considered at this time. *Parafontaria* was separated, in the original description, from *Japonaria* on the basis of leg spination as well as differences in the male gonopods. Later, Verhoeff (1937, Zool. Anz., vol. 117, p. 313) emphasized only the latter character, but at the same time twice made the point that *laminata* was intermediate between the subgenera and empirically placed it in *Japonaria*.

In 1938, Attems maintained the subgenera as separate entities, while raising *Japonaria* (*s. l.*) to full generic rank, placing *laminata* in *Japonaria* despite the fact that it fit his diagnosis of *Parafontaria* as well as did the included species, *P. armigera* Verhoeff. In the same paper, Attems referred *Parafontaria Kuhlghatzii* Verhoeff to the synonymy of *J. laminata* (and, I believe, without justification).

In the light of the preceding information regarding the apparent lack of agreement concerning these two groups, as well as the fact that no constant differences obtain in the gonopods, I believe it wise to discontinue use of *Parafontaria*.

In connection with the genus *Japonaria*, the dominant group of Japanese xystodesmids, it should be mentioned that the name may be preoccupied by the earlier *Xystodesmus* O. F. Cook (1895, Ann. N. Y. Acad. Sci., vol. 9, p. 5) based on *Polydesmus martensii* Peters, a species which remains known only from the original description (Monats. der K. Akad. Wiss. Berlin, 1864, p. 531), based on a specimen from Yokohama.

Fontaria tonominea Attems (1899, Denk. Akad. Wien, vol. 68, p. 260, type locality Tonomine, Central Japan) was referred to the genus *Apheloria* by Attems in 1938 (*op. cit.*, p. 171). This species is almost certainly a *Japonaria*.

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H. K. Gloyd, Director of the Museum.

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